

TWO NEW SPECIES AND ONE NEW VARIETY OF *DRIMYS* FORST., WITH NOTES ON THE SPECIES OF *DRIMYS* AND *BUBBIA* VAN TIEGH. OF SOUTH-EASTERN AUSTRALIA AND LORD HOWE ISLAND.

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(Plate v; two Text-figures.)

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The genera *Drimys* Forst. and *Bubbia* V. Tiegh. are placed by Hutchinson (Kew Bull., 1921, pp. 185-190) in the Family Winteraceae. This family had previously been regarded as a tribe of the family Magnoliaceae, but it differs in a number of features, which mark it as being more advanced from an evolutionary point of view. This is shown particularly by the exstipulate leaves, the floral axis short and never cone-like in fruit, and the carpels arranged more or less in a single whorl. It contains about 7 genera with a more tropical and southerly distribution than the true Magnoliaceae.

DRIMYS Forst.

The genus *Drimys* occurs in Eastern Australia, the Malay Archipelago, New Caledonia, and South America. In New South Wales, the species are restricted either to regions of high altitude or else to the rain-forest formations characteristic of the gullies and river systems of the coastal and highland districts.

DRIMYS PURPURASCENS, n. sp. Plate v; Text-fig. 1.

Frutex glaber, aromaticus, 1-2 m. altus; rami teretes, parum glaucoi, hebetes-purpurelli iuvenes; gemmae foliorum terminales in bracteis caducis purpurellis angustis ovatis acuminatis 10-15 mm. longis circumdatae; folia exstipulata, alterna, in parte superiore approximata, oblanceolata, obtusa vel vix acuta, 5-16 cm. \times 1-5 cm., sensim angustata ad basem sessilem 2-5 mm. latum, plana, tenuiter coriacea, subter parum pallidiora; laminae punctis pellucidis multissimis parvissimis; nervus primus purpureus in vivo, supra prominens et praesertim prope basem, vix praesertim subter; nervi secundarii angulum 45° cum nervo primo efficientes; nervi ultimi numerosiores ad marginalis; margines parum crassi; inflorescentia primo pseudo-terminala, floribus emergentibus singulis in gemmarum bractearum approximatarum axilibus, tandem post rami incrementum pseudo-verticillata; alabastri ovato-globosi; flores in pedicellis 2-4 cm. longis sub-validis 1.5 mm. crassis, dioecis? vel flores staminales cum paucis carpellis; calyx disepalus; sepala concava, orbiculata, 5-7 mm. diam., alba, petala circumdata; petala 2, raro 3, ovata, obtusa, angustata ad basem, 10-12 mm. \times 3-4 mm., alba; stamina numerosa, interiora primo maturescentia, receptaculo subhemisphaerico inserta; filamenta valida, parum compressa, 2-6 mm. longa, interius longiorum; anthera lata, brevia fissuris longitudinalis dehiscentia; carpella 2-8, disiuncta, ovata, circa 2 \times 1 mm. in floribus, brevissime stipitata, stigmatibus sessile lineare introrso et rostro parvissimo excentrico; fructus carnosus bucculis disiunctis, 2-8 plerumque 3-4, fuscis nigro-purpureis, oblongis-globosis, 10-15 mm. \times 8-12 mm. maturis, stipitatis; stipes

1-3 mm. longus; semines multa (circa 10) nigra, disciformia, parum rugosa, embryo prominente flexato. Mt. Royal Ranges habitat.



Text-fig. 1.—*Drimys purpurascens*, with mature fruit. A, $\times 0.4$. B, $\times 1.2$.

Barrington Tops: L. Fraser and J. Vickery, May, 1936 (Type), Nov., 1936, 7/1/1934; B. Veech, 20/11/1931; J. Hopson, Jan., 1924; L. Harrison, Jan., 1925; J. L. Boorman, Dec., 1915.

Glabrous, aromatic shrub, 1-2 m. high; branches terete, slightly glaucous, dull purplish coloured when young, smooth, or slightly rough when dry; terminal leaf-buds enclosed in caducous, purplish, narrow ovate-acuminate scales, about 10-15 mm. long; leaves exstipulate, alternate, the lower ones distant, the upper ones approximate, oblanceolate, obtuse or scarcely acute, 5-16 cm. long by 1-5 cm. wide, tapering towards the sessile, 2-5 mm. wide base, flat, thinly coriaceous, very slightly paler underneath; lamina with very numerous, very small, pellucid dots; midrib purple-coloured when fresh, prominent and protruding on the upper surface, especially near the base, scarcely protruding on the lower surface, the secondary veins making an angle of 45° with the midrib, the finer veins more numerous towards the margins; margins very slightly thickened; inflorescence at first pseudo-terminal, the flowers arising singly in the axils of the closely-spaced bud-scales,

then by further growth of the shoot the inflorescence becomes pseudo-verticillate; flower buds ovate globose; flowers dioecious? or the staminate flowers bearing few carpels, on moderately stout pedicels 2-4 cm. long \times 1.5 mm. thick; female flowers not seen; calyx of 2 concave sepals enclosing the petals, the sepals orbicular, about 5-7 mm. diameter, white; petals 2, rarely 3, ovate, obtuse, slightly narrowed at the base, 10-12 mm. \times 3-4 mm., white; stamens numerous, inserted on the sub-hemispherical receptacle, the inner ones ripening first; filaments stout, slightly compressed, 2-6 mm. long, those of the inner stamens the longest; anthers broad, short, opening by lateral, longitudinal slits; carpels 2-8, free, about 2 mm. \times 1 mm., ovate, very shortly stipitate, with a sessile, linear, introrse stigma, and a very small excentric beak; fruit succulent, of 2-8, usually 3-4, free berries, deep blackish-purple in colour, oblong globose, about 10-15 mm. \times 8-12 mm. at maturity, each carpel shortly stipitate, the stipe 1-3 mm. long.

So far this species has been found only in a restricted area on the Mt. Royal Ranges in the vicinity of the Barrington Tops, where it occurs abundantly at an altitude of about 4,500 feet, in a *Eucalyptus coriacea-Poa caespitosa* association. It can be readily distinguished by its large oblanceolate leaves with purplish midrib, and its large dark purple fruit consisting usually of several carpels, which hang in handsome clusters.

DRIMYS STIPITATA, n. sp. Text-fig. 2.

Frutex vel raro parum arborescens, glaber, 1-2.5 m. altus; rami teretes, aliquantuli glauci, hebetes-purpurelli iuvenes; gemmae foliorum terminales in bracteis caducis purpurellis ovatis acutis circa 5-12 mm. longis circumdatae; folia exstipulata, alterna, in parte superiore approximata, sessilia vel subsessilia, lanceolata, acuta, 5-13 cm. \times 0.7-2 cm., plana, parum pallida subter in sicco, reticulata; laminae punctis pellucidis multissimis parvissimis, saepe non cernandis per textum foliorum; nervus primus parum prominens utrinque prope basem; nervi secundarii obliquissimi, angulum acutum cum nervo primo efficientes; inflorescentia primo pseudo-terminalis, floribus emergentibus singulis in axilibus bractearum gemmarum approximatarum, tandem post incrementum rami pseudo-verticillata; flores in pedicellis aliquantis gracilibus circa 1.5-2 cm. longis vel ad 2-4 cm. posthac producentibus, dioeciae? vel flores staminales cum paucis carpellis; calyx disepalus; sepala concava, late ovata, sub-acuta, circa 6 mm. \times 4 mm., alba, petala circumdata; petala 2, ovata, angustata ad basem, obtusa, circa 5-6 mm. \times 1.5 mm., alba; stamina numerosa, interiora primo maturescentia; filamenta aliquanta valida compressa, 1-5 mm. longa, interiora longissima; anthera lata, brevibus fissuris longitudinalibus dehiscentia; carpella 2-8, disiuncta, longe stipitata, stigmatibus sessile lineare introrso; fructus carnosus, 2-8 bacculis apocarpis stipitatis; stipes gracilis, 4-8 mm. longus; fructus maturus non visus; fructus iuvenior circa 6 mm. \times 4 mm., 12-15 seminibus 2 mm. diam. disciformibus embryone prominente flexato. Declivitates orientes N.S.W. septentrionalis habitat. (Synonym: *D. aromatica* var. *pedunculata* Maiden, *Agric. Gaz. N.S.W.*, v, 1894, 600.)

Guy Fawkes, J. H. Maiden, Feb., 1895 (Type); Jeogla, L. Fraser and J. Vickery, 24/1/34; Dorrigo State Forest, C. T. White, 7572, 4/10/1930; Upper Hastings River, J. H. Maiden, Nov., 1897; Walcha, J. F. Campbell, Nov., 1899; Backwater (without flower or fruit), Rev. E. N. McKie, 29/9/1932; Clarence River, Wilcox, No. 1875; Hastings River, Dr. Beckler.

Tall, glabrous shrub, or rarely somewhat arborescent, 1-2.5 m. high; branches terete, slightly glaucous and dull purplish when young; terminal leaf-buds enclosed in caducous, ovate, acute, purplish scales, about 5-12 mm. long; leaves exstipulate,

alternate, the upper ones rather approximate, sessile or subsessile, lanceolate, acute, 5-13 cm. long by 0.7-2 cm. broad, flat, slightly paler underneath when dry, net-veined, the midrib slightly protruding on each side near the base, the secondary veins very oblique, making an acute angle with the midrib; pellucid dots very



Text-fig. 2.—*Drimys stipitata*, with immature fruit. $\times 0.4$.

small, numerous, often invisible owing to the texture of the leaf; inflorescence at first pseudo-terminal, the flowers arising singly in the axils of the closely-spaced bud-scales, then by further growth of the shoot the inflorescence becomes pseudoverticillate; flowers on rather slender pedicels about 1.5-2 cm. long which elongate to 2-4 cm. after flowering, dioecious? or the staminate flowers bearing few carpels; calyx of 2 concave, broadly ovate, subacute, white sepals about 6 mm. \times 4 mm., enclosing the petals; petals 2, ovate, narrowed at the base, obtuse, 5-6 mm. \times 1.5 mm., white; stamens numerous, the inner ones ripening first; filaments fairly stout, compressed, 1-5 mm. long, those of the inner stamens the longest; anthers broad, short, opening by longitudinal slits; carpels 2-8, free, stipitate, with a sessile linear introrse stigma; fruit succulent, consisting of 2-8 free, oblong, stipitate berries, the stipe slender, 4-8 mm. long; mature fruits not seen; younger fruiting carpels about 6 mm. \times 4 mm., each with about 12-15 flat, discoid seeds, about 2 mm. diam., with strongly curved embryos.

In his description of *D. aromatica* var. *pedunculata* Maiden states: "The umbels are not only not sessile, but the peduncles are half to $1\frac{1}{4}$ inch long in my specimens, while the pedicels are short (half an inch). In both *D. aromatica* and *D. dipetala* the umbels are sessile and the pedicels are much longer than in my specimens." From an examination of the specimens described by Maiden, it is evident that the above description is due to a misconception, the "peduncles" being the pedicels of the flowers comparable with those of the other species mentioned, and the "pedicels" the stipes of the numerous carpels. I have, therefore, considered it

inadvisable to make use of the varietal name *pedunculata* when raising this form to specific rank.

This species is found at an altitude of about 2,000–4,000 feet, on the eastern slopes of the coastal range of northern New South Wales. It is characterized particularly by the long stipes of the carpels, especially when in fruit.

DRIMYS INSIPIDA Druce, Bot. Soc. and Exch. Club, 1917.

Synonyms: *Tasmannia insipida* R.Br., in De Candolle's Regni Vegetabilis Systema, 1, 1818, p. 445–6.—*Tasmannia dipetala* R.Br., in De Candolle's Prod., 1, 1824, p. 78.—*Drimys dipetala* F.v.M., Plants Indigenous to the Colony of Victoria, 1, 1860–1864, p. 21; Bentham, Fl. Aust., 1, 1863, p. 49; Maiden & Betche, Census of N.S.W. Plants, 1916, p. 79.—*Drimys insipida* Domin, Biblioth. Bot., lxxxix, 1925, p. 115.—*Tasmannia monticola* A. Rich., Sert. Astrolab., 1834, p. 50.

In his description of *T. monticola*, Richard states that it differs from *T. insipida* in the more elongated leaves, more contracted at their base, and in the hermaphrodite flowers, disposed in a simple umbel at the ends of the branches. The staminate flowers of *D. insipida*, however, often show the presence of a carpel, and, when first formed, the flowers arising in the axils of the bud scales do appear to form a terminal umbel, but this appearance is altered when the terminal shoot continues its growth. A specimen in the National Herbarium collected by Fraser before 1833 is probably a cotype of *T. monticola*, and does not differ from *D. insipida*.

DRIMYS LANCEOLATA Baill., Nat. Hist. Pl., 1, 1871, p. 154.

Synonyms: *Winterania lanceolata* Poir., Encycl., viii, 1808, p. 799–800.—*Tasmannia aromatica* R.Br. in De Candolle's Regni Vegetabilis Systema, 1, 1818, p. 455, and De Candolle's Prodromus, 1, 1824, p. 78.—*Drimys aromatica* F.v.M., Plants Indigenous to the Colony of Victoria, 1860–1862, p. 20–21; Bentham, Fl. Aust., 1, 1863, p. 49; Maiden & Betche, Census of N.S.W. Plants, 1916, p. 79.

Winterania lanceolata Poir. and *Tasmannia aromatica* R.Br. have been regarded as synonyms by De Candolle (1824) and by Baillon (1871), and it is probable that these authors were able to compare the types. *W. lanceolata* was described from fruiting but not flowering material, and in certain respects the description is difficult to reconcile with *T. aromatica* R.Br., viz., . . . leaves opposite . . . petioles scarcely 6 lines long . . . flowers lateral and terminal, situated in the axils of the leaves and disposed in small simple clusters, almost umbels, scarcely longer than the petioles . . . fruit of small, globular, three-lobed berries, with the persistent calyx at their base. In other respects, however, the description appears to agree with *T. aromatica*.

In addition, the locality of collection of *Winterania lanceolata*, namely, the coast of New Holland, makes it more than probable that the species concerned is identical with *T. aromatica*.

D. lanceolata is found in Tasmania, where it apparently grows almost at sea-level, but in Victoria, and more especially in New South Wales, it is restricted to higher altitudes. It is a common constituent of the flora of the Australian Alps, extends along the eastern highlands of New South Wales at altitudes of 2,000–4,000 feet, as at Clyde Mt. and on the Blue Mountains, and occurs at an altitude of about 4,500 feet on the Barrington Tops. The specimens from the Australian Alps and Tasmania often have distinctly thicker, more coriaceous leaves than those from the Clyde Mt., Blue Mts., and Barrington Tops, but, as the specimens agree closely in other respects, it is probable that the variation is due merely to habitat factors.

DRIMYS LANCEOLATA Druce var. PARVIFOLIA, n. var.

Ab typo parvo habito, ramis concretescentibus, foliis approximatis parvis, coriaceis, lanceolatis, vel spathulatis, plerumque obtusis, 8-23 mm. × 2-5 mm., et floribus parvioribus, petalis circa 2 mm. longis differt.

Localities: Upper Yarra, Victoria, J. Staer, April, 1911 (Type); Gippsland, C. French, 1895; Mt. Mueller near Mt. Baw Baw, Melvin, 1889; Mt. Wellington, Gippsland, Dr. Mueller, Nov., 1854; Summit of the Baw Baw Ranges 4-5,000 feet, Dr. Mueller.

This variety differs from the type in its small habit, condensed branches, approximate, small, coriaceous, lanceolate or spathulate, usually obtuse leaves 8-23 mm. long by 2-5 mm. wide, and small flowers with petals about 2 mm. long. It appears very distinct from typical *D. lanceolata*, but as this species varies considerably in leaf size and texture according to the degree of exposure and low temperature to which it is subjected, field observations would be necessary before it could be decided whether this variety is worthy of specific rank.

Imperfectly known species.

The following species were named apparently from material sent from Victoria by von Mueller. In each case the descriptions are very brief, except in regard to the anatomy. I have examined the Australian material of *Drimys* from the Melbourne National Herbarium, and can find no specimens which could be regarded as cotypes of these species.

Drimys xerophila Parmentier, *Bull. Sc. France et Belg.*, xxvii, 1895, p. 225-226 and 299-300. This species is probably synonymous with *D. lanceolata*.

Drimys Muellerei Parmentier, *Bull. Sc. France et Belg.*, xxvii, 1895, p. 227, 300. As Van Tieghem (*Journ. de Bot.*, xiv, 1900, p. 283-4) has pointed out, it is doubtful whether this species belongs to the genus *Drimys*, since it was described as showing vessels in the secondary wood.

Drimys intermedia Parmentier, *Bull. Sc. France et Belg.*, xxvii, 1895, p. 223, 224. This species is probably synonymous with *D. lanceolata*.

Key to the species of Drimys in New South Wales.

Leaves 1-8 cm. long; petals usually more than 2; fruit globose consisting of 1 sessile carpel, bilobed, about 5 mm. diameter.

Leaves 2.5-8 cm. mostly about 5 cm. long, usually more or less acute, lanceolate. *Drimys lanceolata*.

Leaves 1-2.5 cm. long, lanceolate or spathulate, usually obtuse. *Drimys lanceolata* var. *parvifolia*.

Leaves 8-20 cm. long, rarely less; petals usually 2; berries more or less oblong.

Fruit consisting of 1 sessile carpel, about 12-16 mm. long; blade distinctly truncate and slightly auriculate at the base; petioles 2-4 mm. long; small tree with lanceolate, acute or acuminate leaves, inhabiting brush forests. *Drimys insipida*.

Fruit consisting of several carpels; blade not or scarcely truncate at the base, sessile or subsessile.

Carpels shortly stipitate; leaves oblanceolate, broad, obtuse, the secondary veins forming an angle of about 45° with the midrib. . . *Drimys purpurascens*.

Carpels on long stipes; leaves rather narrow lanceolate, acute, the secondary veins oblique, forming an acute angle with the midrib. . . . *Drimys stipitata*.

BUBBIA Van Tieghem.

The genus *Bubbia* is distinguished from *Drimys* in having a small calyx which exposes the petals in bud, while in *Drimys* the calyx encloses the petals in bud.

It is further distinguished from the Australian species of *Drimys* by its inflorescence, which is in the form of a terminal cluster of many-flowered cymes. (Hutchinson, *Kew Bull.*, 1921, p. 189; Van Tieghem, *Journ. de Bot.*, xiv, 1900, p. 293.) It is a small genus occurring in Lord Howe Island, New Caledonia, and New Guinea.

BUBBIA HOWEANA V. Tiegh., *Journ. de Bot.*, xiv, 1900, p. 293.

Synonyms: *Drimys Howeana* F.v.M., *Fragm. Phytog. Austral.*, vii, 1869-1871, p. 17.—*Drimys insularis* Baill. of F.v.M., *Fragm. Phytog. Austral.*, ix, 1875, p. 76.

Van Tieghem (1900, p. 292) recognizes a second species of *Bubbia* from Lord Howe Island, viz., *B. Mülleri* V. Tiegh. This species was named apparently without flowers or fruit, and no description is given by Van Tieghem. It is not represented in the Sydney National Herbarium.

In conclusion, I desire to thank Mr. R. H. Anderson, Botanist and Curator of the National Herbarium, Sydney, for his interest and assistance during the progress of the work. I wish also to acknowledge the courtesy of Mr. F. J. Rae, Director of the Botanic Gardens, Melbourne, in allowing me to examine the Australian specimens of *Drimys* contained in the Melbourne National Herbarium.

EXPLANATION OF PLATE V.

Drimys purpurascens, on the Barrington Tops Plateau.
